Responses to the Requirement for Information in the Detailed Action

a) Paragraph 2

Paragraph 2 of the Detailed Action requests Applicants to confirm or deny, by a "yes" or "no" response, whether "the only difference between the cited prior art and applicants' claims is that the claimed inventions use digital signals whereas the prior art does not." By this response, Applicants submit that the use of digital signals is not the only difference between the pending claims and the cited prior art.

b) Paragraph 3

i) First bullet point

Paragraph 3 of the November Office Action first requests that Applicants reconcile a statement that one of the Inventors made during an Interview, concerning whether Boucher discloses altering an analog condition of the bus, with a statement in the Remarks section of the Response filed 10/30/06, that "Boucher does not disclose altering an analog condition of the network at all."

Upon further reconsideration, Applicants acknowledge that sending an arming signal at a higher voltage, as disclosed in Boucher, could be considered to be altering the analog condition of the network. While one could argue that merely sending different types of signals at different power levels is not changing the "condition" of the network, it appears that the term is defined broadly enough in the specification to include this.

Paragraph 3 of the November Office Action also asks whether Figure 3 of Boucher discloses "altering of an analog condition." It does not. As Boucher discusses in column 14, lines 15-65, Figure 3 of the reference corresponds to a "time-phased arming" system where energy is repeatedly delivered to a firing capacitor over time to build up a sufficient charge in the capacitor to be "armed." In other words, the energy is applied to the capacitor in a series of "arming" commands. With each succeeding arming command, the

capacitor firing voltage initially rises, but then subsequently drains as an "arming switch" is used to drain the charge from the capacitor. As Boucher states, "in order to fully charge firing capacitor 26, a series of arming intervals during which arming switch 28 is closed must occur with sufficient duration and frequency to overcome the dissipative function of bleed resistor 32." (Boucher, col. 14, ll. 48-51.) The capacitor therefore becomes "armed" by charging faster than it drains. This is not an example of altering an "analog condition of the network;" it simply demonstrates a mechanism for incrementally charging a capacitor by repeatedly applying the same pulse.

To be clear, independent claim 66 recites that the bus controller is structured to (i) first transmit a digital arming command onto the network, (ii) thereafter alter an analog condition of the network to a firing condition, and (iii) thereafter transmit a digital firing command, where the pyrotechnic device does not fire until the analog condition of the network has been modified to the firing condition and the digital firing command is received. Boucher does not disclose this. Instead, Boucher merely discloses that arming signals are provided at a voltage level that is higher than that for communication signals. (Boucher, 10: 58 – 11:17.)

Independent claim 91 recites that at least one pyrotechnic device includes a logic device having a unique identifier and a bus interface, and the pyrotechnic device does not fire until the bus interface senses that the analog condition of the network has been modified to the firing condition, and the logic device detects that a digital firing command is received that includes the unique identifier of its logic device. Again, Boucher does not disclose this. Instead, Boucher teaches that communication signals "that are not intended themselves to arm and/or initiate the initiators are carried out at a level that is *insufficient to arm* and/or initiate the initiators even if the communication signals are somehow misinterpreted." (Boucher 11: 1-6.) In other words, in Boucher, communication signals are sent out at a low voltage so as to not inadvertently charge the firing capacitor, and the arming signals are sent out at a higher voltage in order to provide enough energy to charge

the firing capacitor. (Boucher, 16: 4-7.) In contrast, claim 91 recites that the bus interface senses that the analog condition of the network has been modified.

Independent claims 90 and 101 recite that the pyrotechnic device discharges the stored activation energy when a digital disarming command is received that includes the unique identifier of its logic device. Boucher does not disclose the use of a digital disarming command. Instead, as described above, Figure 3 in Boucher is directed to a system with a bleed resistor that drains the capacitor whenever a switch is closed, so that the capacitor will automatically discharge unless arming signals are repeatedly provided. This is different from employing a digital disarming command.

ii) Second bullet point

Paragraph 3 next asks whether the signals with "address portions" that are referred to in col. 9, line 36 to col. 10, line 17 of Boucher are considered to be digital signals. Applicants acknowledge that these signals are "digital signals." With regard to claims 90 and 101, Applicants assert that Boucher does not disclose using a "digital disarming command" as recited in the claims. However, Applicants do not contest that Boucher discloses sending and receiving digital signals more generally.

iii) Third bullet point

Paragraph 3 additionally requests that Applicants provide support for limitations in each of claims 91-106. Since claims 91 and 101 substantially overlap claims 66 and 90, only the added limitations are addressed.

- Claim 91: pg. 7, ll. 10-14; pg. 18, ll. 18-20; pg. 19, ll. 10-11; pg. 20, ll. 2-5, 10-11.

- Claim 92: pg. 19, ll. 5-10.

- Claim 93: pg. 17, l. 17 – pg. 18, l. 3.

- Claim 94: pg. 1, l. 16; pg. 2, ll. 10-17; pg. 5, ll. 19-22.

- Claim 95: pg. 2, ll. 10-17 pg. 5, ll. 19-22; pg. 16, ll. 4-7.

- Claim 96: pg 18, ll. 7-13.

- Claim 97: pg. 15, line 21 – pg. 16, line 2.

- Claim 98: pg. 17, ll.1-4.

- Claim 99: pg. 13, line 4 – pg. 15, line 2.

- Claim 100: pg 15, ll. 3-15.

- Claim 101: pg. 7, ll. 10-14; pg. 18, ll. 18-20; pg. 19, ll. 10-11; pg. 20, ll. 2-5, 10-11.

- Claim 102: pg. 1, l. 16; pg. 2, ll. 10-17; pg. 5, ll. 19-22.

- Claim 103: pg. 16, line 8 – pg. 17, line 7

- Claim 104: pg 18, ll. 7-13.

- Claim 105: pg. 13, line 4 – pg. 15, line 2.

- Claim 106: pg 15, ll. 3-15.

iii) Fourth bullet point

Lastly, paragraph 3 requests Applicants to disclose, for each independent claim, whether the limitations therein are known in the prior art. In response, Applicants refer to the Remarks provided in the Amendment filed with the RCE on October 31, 2006, in conjunction with the statements provided above.

As a summary, with regard to claim 66, Applicants submit that a networked electronic ordnance system comprising:

- a bus controller structured to first transmit a digital arming command, thereafter alter an analog condition of the network, and thereafter transmit a digital firing command, and

- a plurality of pyrotechnic devices structured to release stored activation energy into a respective initiator only if both (i) the analog condition of the network has been modified and (ii) the digital firing command is received,

is novel, and is not disclosed in the prior art, taken singly or in combination. At a minimum, none of the cited references or any other known art discloses a system having a bus controller that first transmits a digital arming command, thereafter alters an analog condition of the network, and thereafter transmits a digital firing command.

With regard to claim 90, Applicants submit that a networked electronic ordnance system comprising:

- a bus controller structured to transmit a digital arming command using a unique identifier, and

- a plurality of pyrotechnic devices structured to store activation energy if the digital arming command includes the unique identifier and discharge the stored activation energy if a digital disarming command includes the unique identifier,

is novel, and is not disclosed in the prior art, taken singly or in combination. At a minimum, none of the cited references or any other known art discloses discharging stored activation energy if a digital disarming command is received that includes the pyrotechnic device's unique identifier.

Concerning claim 91, Applicants submit that a networked electronic ordnance system comprising:

- a bus controller for transmitting a digital arming command, altering an analog condition of the network, and transmitting digital firing commands, and

- at least one pyrotechnic device comprising an initiator, a logic device, and a bus interface, and once armed the pyrotechnic device releases stored activation energy into its initiator once both (i) the bus interface senses that the analog condition of the network has been modified and (ii) the logic device detects a digital firing command is received,

is novel, and is not disclosed in the prior art, taken singly or in combination. At a minimum, none of the cited references or any other known art discloses a pyrotechnic device that releases stored energy into its initiator only after the bus interface senses that the analog condition of the network has been modified.

Lastly, regarding claim 101, Applicants submit that a networked electronic ordnance system comprising:

- a bus controller for transmitting a digital arming command using a unique identifier and

- at least one pyrotechnic device storing activation energy upon receiving a digital arming command that includes the unique identifier and discharging the stored activation energy if a digital disarming command is received that includes the unique identifier,

is novel, and is not disclosed in the prior art, taken singly or in combination. At a minimum, none of the cited references or any other known art discloses discharging stored activation

energy if a digital disarming command is received that includes the pyrotechnic device's unique identifier.

c) Paragraph 4

Paragraph 4 requests the significance of U.S. Patent No. 3,672,303 to Brawn ("Brawn"), which was cited in an IDS submitted on October 17, 2006. At a minimum, Brawn is not believed to disclose a bus controller, digital arming, firing, or disarming signals, a logic device, or a bus interface. Accordingly, Applicants are not aware of how this reference may be applicable to any pending claims.

If Applicants' representative can be of assistance in furthering the prosecution of this case, the Examiner is encouraged to contact the undersigned at any time, at (202) 434-1607.

Respectfully submitted,
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Date: December 29, 2006

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